

APPLICANT(S): Yellin, Daniel
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AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

Claims 1 and 2 cancelled.

3 (Currently amended). A method according to claim 1, wherein comprising:
estimating a first value of a parameter for canceling an in-phase/quadrature phase mismatch of an in-phase/quadrature phase comprises estimating at least one parameter, respectively modulator; and
estimating a second value of the parameter for canceling an in-phase/quadrature phase mismatch of an in-phase/quadrature phase the IQ demodulator.

4 (Currently amended). A method according to claim 1, wherein passing the values through the IQ modulator and the IQ demodulator comprises comprising:
passing the first values through the IQ in-phase and quadrature phase modulator in the a processing path of a communication device, and passing the second value through an IQ the in-phase/quadrature phase demodulator in a reverse path of the communication device.

Claims 5 and 6 canceled.

7 (Currently Amended). A method according to claim 1, comprising:
wherein estimating the first and second values of at least one the parameter comprises by accumulating a predetermined number of pairs of provided values and respective distorted values and estimating said first and second values from the accumulated pairs.

8 (Original). A method according to claim 7, wherein the communication device comprises a transmitter and accumulating a predetermined number of pairs comprises accumulating a number of pairs transmitted during a single transmission slot.

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9 (Currently Amended). A method according to claim 13, comprising: wherein passing the values through elements to produce distorted values comprises

passing also values for processing through at least one a multiplier which performs IQ an in-phase/quadrature phase mismatch cancellation based on current values of the at least one an estimated parameter which is to be estimated.

10 (Currently Amended). A method according to claim 9, wherein estimating the at least one parameter comprises determining a next step correction of the current value of the at least one estimated parameter.

11 (Currently Amended). A method according to claim 1 7, comprising repeating the estimating of the at least one parameter a predetermined number of repetitions.

12. (Currently Amended). A method according to claim 1 7, comprising retrieving from storage initial values of the at least one parameter.

13 (Currently Amended). A method according to claim 1 7, comprising storing the an estimated value of the at least one parameter for later use.

14 (Currently Amended). A method according to claim 1 3, wherein providing the values to the processing path comprises comprising providing values generated for the IQ in-phase and quadrature phase mismatch cancellation method to a processing path.

15 (Currently Amended). A method according to claim 1 14, wherein providing the values to the processing path comprises providing values generated without relation to the IQ in-phase and quadrature phase mismatch cancellation method.

16 (Currently Amended). A method according to claim 1 14, comprising: wherein passing the provided values through the at least one non-linear element comprises passing the values through at least one a non-linear element which has a gain which depends on the magnitude of its input signal.

17 (Currently Amended). ~~A method of assigning values to parameters for IQ mismatch cancellation, comprising:~~

~~estimating a complex-valued base band equivalent gain of an amplification unit of a communication device;~~

~~approximating values of ~~one or more~~ a matrices representing an IQ in-phase and quadrature phase mismatch effect of the communication device based on ~~current values of at least one an in-phase and quadrature phase mismatch cancellation~~ parameter ~~for of the IQ effect~~; and~~

~~selecting a ~~next step~~ value of the at least one in-phase/quadrature phase mismatch cancellation parameter for cancellation of the IQ mismatch effect, which next step values to minimize a cost function which depends on values passed through the communication device and depends on the estimated complex-valued base band equivalent gain and the approximated ~~one or more~~ matrices.~~

18 (Original). A method according to claim 17, wherein estimating the complex valued gain comprises estimating separately for each value passed through the communication device.

19 (Original). A method according to claim 17, wherein estimating the complex valued gain comprises estimating once for a plurality of accumulated values passed through the communication device.

20 (Currently Amended). ~~A trainer for an IQ mismatch cancellation unit of a communication device including at least an IQ modulator and an IQ demodulator along a sequential path, comprising:~~

~~a first input adapted to receive values from before an entrance to the first of the IQ modulator and the IQ demodulator along the sequential path;~~

~~— a second input adapted to receive values from after an output of the last of the IQ modulator and the IQ demodulator along the sequential path; and~~

~~a trainer to provide an a determination unit adapted to determine at least one an in-phase/quadrature phase mismatch cancellation parameter of the cancellation unit~~

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responsive to values received from on both an input and an output of an in-phase/quadrature phase modulator and from an input and an output of an in-phase/quadrature phase demodulator to an in-phase/quadrature phase cancellation unit. the first and second inputs.

21 (Currently Amended). A communication device ~~trainer~~ according to claim 20, wherein the trainer does not have inputs from any point between the IQ in-phase/quadrature phase modulator and the IQ in-phase/quadrature phase demodulator.

22 (Currently Amended). A trainer communication device according to claim 20, ~~wherein the sequential path includes~~ comprising a non-linear element between the IQ modulator and the IQ demodulator.

23 (Currently Amended). A trainer communication device according to claim 20, wherein the trainer comprises:

a determination unit is adapted to determine a corrected value of the at least one in-phase/quadrature phase mismatch parameter which minimizes a cost function based on values received from both the first and second inputs the in-phase/quadrature phase modulator and the in-phase/quadrature phase demodulator.

24 (Currently Amended). A trainer communication device according to claim ~~20~~ 23, comprising:

two or more cancellation units wherein the determination unit is adapted to determine at least one the in-phase/quadrature phase mismatch parameter for each of at least of the two or more cancellation units.

25 (Currently Amended). A trainer communication device according to claim ~~20~~ 23, wherein the determination unit is adapted to determine the ~~at least one~~ in-phase/quadrature phase mismatch parameter iteratively.

Claims 26-30 cancelled.

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31 (Currently Amended). A transmitter ~~comprising: according to claim 29, wherein the~~
~~a mismatch trainer to adjust a value of a mismatch parameter;~~
a feedback conversion unit ~~comprises~~ having a demodulator and a mismatch
multiplier of the demodulator and the mismatch trainer is adapted to adjust parameters of the
mismatch multiplier of the demodulator.

32 (Currently Amended). A transmitter according to claim 29 31, comprising:
mismatch adjustment circuitry adapted to adjust signals entering an
in-phase/quadrature phase modulator in order to cancel mismatch effects of the modulator
and wherein the mismatch adjustment circuitry ~~comprises~~ includes a matrix multiplier.

33 (Currently Amended). A transmitter according to claim 29 31, wherein the mismatch
trainer is adapted to adjust ~~the at least one~~ the mismatch parameter ~~of the mismatch~~
~~adjustment circuitry~~ iteratively.

34 (Currently Amended). A transmitter according to claim 29 31, comprising a processor
which includes ~~the a~~ a predistorter, ~~the a~~ a predistorter trainer, ~~the~~ mismatch adjustment circuitry
and the mismatch trainer.

35 (Original). A method of assigning values to parameters for IQ mismatch cancellation of a
transmitter, comprising:

~~transmitting values by the transmitter;~~
estimating at least one parameter for cancellation of IQ mismatch effects of the
transmitter responsive to the values transmitted during a first period; and
adjusting the at least one parameter estimated responsive to the values transmitted
during a first period responsive to values transmitted during a second period, which second
period is separated from the first period by a rest period in which the transmitted values are
not used to adjust parameters for IQ mismatch cancellation.

36 (Original). A method according to claim 35, wherein the values transmitted during the
rest period are used for adjusting a predistorter of the transmitter.

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37 (Original): A method according to claim 36, comprising adjusting the predistorter based
on values transmitted before the first period.
